have been rejected under §102(e) as anticipated by Silverbrook, U.S. Patent No. 6,171,875 B1 (Silverbrook). Claims 4, 5, and 7-9 have been rejected under 35 U.S.C. §103(a) as obvious over Nojima in view of Allen et al., EP 0 564 102 A2 (Allen). Claims 10 and 11 have been rejected under §103(a) as obvious over Nojima in view of Drake, EP 0 512 799 A2 (Drake).

I. Request for Withdrawal of "Final" Status of Official Action as Premature

As a preliminary matter, making the official action a final action at the present juncture in this application is improper based on the following grounds. The applicants respectfully solicit that the finality of the action be withdrawn as premature.

The official action recites MPEP §706.07(a) as a basis for making this second official action a Final action. As clearly stated in this MPEP section, a second action is properly made Final when an applicants' "***amendments***" necessitated the *new grounds* of rejection presented in the subsequent action. By citing the Nojima patent as a reference in rejecting the claims in this application, the official action has indeed raised a new grounds of rejection. However, the new grounds are raised here ***are not in response to any amendments made by applicants***, but are raised because the applicants successfully overcame the prior grounds of rejection.

To illustrate, the only amendments made to the claims by the applicants in response to the prior action were non-substantive in nature and were directed to correcting minor informalities noted by the examiner. ***No amendments were made*** to the claims in order to distinguish over the previously cited art. The applicants' ***amendments***, *therefore, did not necessitate the new grounds of rejection*. The subject matter of rejected claims 1-17 remains essentially identical to that as originally filed.

Thus, the *new grounds* of rejection based on the Nojima reference in this second official action are necessitated by the applicants' success in overcoming the merits of the prior rejections. The applicants respectfully submit that his second official action should not have been made Final. The finality of the action is improper and should be withdrawn. Such withdrawal is hereby respectfully solicited.

II. Claim Rejections - 35 U.S.C. §102

Claims 1-3, 6, and 12 have been rejected as anticipated by Nojima. Claims 13-17 have been rejected as anticipated by Silverbrook. Claims 2 and 3 depend from independent claim 1, claim 12 depends from independent claim 6, and claims 14-17 depend from independent claim 13. The merits of the rejections as to claims 1, 6, and 13 are therefore addressed below.

An anticipation rejection places a burden on the examiner to show that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). A proper anticipation rejection requires that the "identical invention must be shown in as complete detail as is contained in the patent claim." *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). This anticipation rejection based on Nojima fails to meet this required burden of proof for the following reasons.

A. Independent Claim 1

Independent claim 1 recites that a drive circuit means is ***in substantial thermal contact with*** a conduit means so as to transfer a substantial part of the heat generated

in the drive circuit to the droplet fluid. Claim 1 further recites that the conduit means transfers fluid ***to and away from*** the fluid chamber. Nojima fails to disclose or suggest at least these limitations of claim 1.

The action notes several embodiments of Nojima in rejecting these claims. With respect to the above noted limitations of claim 1, the official action refers specifically to: 1) col 5, lines 61-67 and col. 6, lines 1-11, 48-67 - (Embodiment 1); 2) col. 8, lines 32-68 and col. 9, lines 1-10 (Embodiment 2); and, 3) col. 29, lines 31-50 and col. 31, lines 11-18 - (Embodiment 26) as disclosing features of claim 1. Each embodiment is addressed separately below.

1. <u>Nojima Embodiment 1</u>

The ink-jet head 12 is a laminated structure including three substrates. An intermediate silicon substrate 2 has a plurality of nozzle grooves 21 arranged at equal intervals on a surface of the substrate. The nozzle grooves extend parallel to each other to form nozzle openings 4. Concave portions 22 respectively communicate with the nozzle grooves 21 and form ejection chambers 6. The chambers 6 have bottom walls serving as diaphragms 5. Fine grooves 23 are respectively provided in the rear of the concave portions 22 and serve as ink inlets to form orifices 7. A concave portion 24 forms a common ink cavity 8 for supplying ink to the respective ejection chambers 6. Further concave portions 25 are respectively provided under the diaphragms 5 to form vibration chambers 9. The nozzle openings 4, the ejection chambers 6, the orifices 7 and the ink cavity 8 are formed by bonding the upper substrate 200 on the intermediate substrate 2.

A lower substrate 3 (formed from Pyrex glass, column 11, line 53) is bonded on a lower surface of the intermediate substrate 2. The vibration chambers 9 are formed by bonding the lower substrate 3 on the intermediate substrate 2. Electrodes 31 (formed from nickel, column 11, line 52) are formed on a surface of the lower substrate 3 and in positions that correspond to the respective diaphragms 5. Each of the electrodes 31 has a lead portion 32 and a terminal portion 33. The electrodes 31 and the lead portions 32 (except the terminal portions 33) are covered with an insulating film 34 (formed from silicon dioxide, column 11, line 63). Oscillation circuits 26 are respectively connected between the terminal portions 33 of the electrodes 31 and the intermediate substrate 2.

The official action refers to Nojima at column 6, lines 48-67, which states:

> In the following, the operation of this embodiment 15 (*sic.*) is described. For example, a positive pulse voltage generated by one of the oscillation circuits 26 is applied to the corresponding electrode 31. When the surface of the electrode 31 is charged with electricity to a positive potential, the lower surface of the corresponding diaphragm 5 is charged with electricity of a negative potential. Accordingly, the diaphragm 5 is distorted downward by the action of the electrostatic attraction. When the electrode 31 is then made off, the diaphragm 5 is restored. Accordingly, the pressure in the ejection chamber 6 increases rapidly, so that the ink drop 13 is ejected from the nozzle opening 4 onto the recording paper 15. Further, the ink 11 is supplied from the ink cavity 8 to the ejection chamber 6 through the orifice 7 by the downward distortion of the diaphragm 5. As the oscillation circuit 26, a circuit for alternately generating a zero voltage and a positive voltage, an AC electric source, or the like, may be used. Recording can be made by controlling the electric pulses to be applied to the electrodes 31 of the respective nozzle openings 4.

Referring now to claim 1 of the present application, it would appear that the official action is equating the diaphragm 5 to the "actuator means", the electrode 31 and oscillation circuit 26 to the "drive circuit means", and the nozzle opening 4,

orifice 7, and ink cavity 8 to the "conduit means" (as the droplet fluid *must* be conveyed both to and away from the fluid chamber according to claim 1).

It is clear from the above, that Nojima at column 6, lines 48 to 67 does not disclose, as asserted in the action, that the drive circuit means (electrode 31 and oscillation circuit 26) *is in substantial thermal contact* with said conduit means (nozzle opening 4, orifice 7, and ink cavity 8) so as to transfer a substantial part of the heat generated in the drive circuit to the droplet fluid. To the contrary, column 6, lines 48-67, and the entire Nojima patent, is wholly ***silent as to both generation and transfer of heat*** from the electrode 31 and oscillation circuit.

To illustrate, it is clear that the electrode 31 and oscillation circuit 26 are not in substantial thermal contact with the silicon substrate 2. With reference to Fig. 2, the electrode 31 is separated from the silicon substrate 2 by an SiO_2 insulating film 34 and an air-filled vibration chamber 9. As is well known, both air and silicon dioxide are good thermal insulators, having thermal conductivity, in W/cm/K, of around 0.0003 and 0.0104 respectively, in comparison to nickel (0.906 W/cm/K) and silicon (1.457 W/cm/K). Referring back to Fig. 2, oscillation chamber 26 is distanced from the silicon substrate 2. Accordingly, heat generated in the electrode would not be transferred to the silicon substrate 2, but would instead be dissipated either by convection from the air-exposed terminal portion 33 of the electrode 31, or by conduction to the oscillation chamber 26.

Embodiment 1 in Nojima fails to disclose or suggest a drive circuit means ***in substantial thermal contact with*** a conduit means transfers fluid ***to and away from*** a fluid chamber so as to transfer a substantial part of the heat generated in the drive

circuit to the droplet fluid, as recited in claim 1. Nojima, embodiment 1, therefore, fails to disclose or suggest all of the limitations of independent claim 1.

2. Nojima Embodiment 2

Embodiment 2 varies from Embodiment 1 of Nojima in that, with reference to Fig. 6, the upper and lower walls of the ejection chamber 6 are used as diaphragms 5a and 5b. The diaphragms 5a and 5b and vibration chambers 9a and 9b are formed in the respective facing silicon substrates 2a and 2b. The nozzle opening 4 is formed in an edge junction face between the two substrates 2a and 2b. Electrodes 31a and 31b are respectively provided on the lower surface of the upper substrate 200 and on the upper surface of the lower substrate 3. The electrodes are respectively mounted into the vibration chambers 9a and 9b. As shown in Fig. 6, each electrode 31a and 31b is covered with a respective insulating film 34, as in Embodiment 1.

As with Embodiment 1, *there is no disclosure whatsoever of any transfer of heat from the electrodes 31a and 31b to droplet fluid*. Furthermore, as in Embodiment 1, the electrodes 31a and 31b are separated from the silicon substrates 2a and 2b by a respective insulating film 34 and by the air-filled vibrations chambers 9a and 9b, respectively. Thus, the electrodes 31a and 31b are **not** in substantial thermal contact with the silicon substrates.

Embodiment 2 in Nojima fails to disclose or suggest a drive circuit means ***in substantial thermal contact with*** a conduit means that transfers fluid ***to and away from*** a fluid chamber so as to transfer a substantial part of the heat generated in the drive circuit to the droplet fluid, as recited in claim 1. Nojima Embodiment 2, therefore, fails to disclose or suggest all of the limitations of independent claim 1.

3. Nojima Embodiment 26

The official action also cites column 29, lines 31 to 50, of Nojima that describes Embodiment 26, which states:

> Referring specifically to Fig. 52, the inkjet head 5210 in this embodiment comprises a laminated construction having three substrates 521, 522, 523 structured as described in detail below. The first substrate 521, arranged between substrates 522 and 523, is a silicon wafer comprising plural parallel nozzle channels 5211 formed on the surface of and at equal intervals from one edge of substrate 521 to form plural nozzles 524; recesses 5212 continuous to the respective nozzle channel 5211 and forming ejection chambers 526, of which the bottom is diaphragm 525; narrow channels 5213 functioning as the ink inlets and provided at the back of recesses 5212; and recess 5214 forming common ink cavity 528 for supplying ink to each ejection chamber 526. Ink inlets 5213a are also disposed at the back of recess 5214. Each cross-sectional area of ink inlet 5213a is smaller than that of a nozzle 524, and functions as a filter for preventing the introduction of foreign matter to the ink in the inkjet head. As will be understood, narrow channels 5213 form orifices 527 when the first and third substrates are bonded together.

With reference to Figs. 52 and 54, this embodiment varies from Embodiment 1 in the following ways. First, the intermediate silicon substrate 521 is coated with an oxide thin film 5224, *which further thermally insulates the silicon substrate 521 from the electrode*. Second, support members 5235 are provided in the vibration chambers 529 in the boro-silicate glass substrate 522. Gold electrodes 5221 are formed on the glass substrate by sputtering ***around*** the support members 5235. While there is no disclosure of forming an insulating film over the electrodes, the electrodes remain thermally insulated from the silicon substrate by the nitrogen-filled vibration chambers 529. Boro-silicate glass has poor thermal conductivity (0.011 W/cm/K). This prevents substantial transfer of any generated heat to the silicon substrate through the support members 5235.

As with Embodiments 1 and 2 discussed above, and contrary to the assertions made in the official action, Embodiment 26 of Nojima et al. also *fails to disclose or suggest any transfer of heat to the ejection fluid.* Thus, Embodiment 26 in Nojima fails to disclose or suggest all of the limitations of independent claim 1. Similarly, every other embodiment of Nojima also fails to disclose of suggest all of the limitations of claim 1.

For at least the reasons set forth above, Nojima does not disclose each and every element as set forth in independent claim 1 and dependent claims 2-3. The necessary burden of proof for a proper anticipation rejection, therefore, has not been met. As a result, Nojima does not anticipate those claims.

B. Independent Claim 6

With regard to independent claim 6 and dependent claim 12, claim 6 requires ***a support member for the droplet ejection unit.*** The support member has at least one droplet fluid passageway communicating with the plurality of fluid chambers. The passageway is arranged so as to convey droplet fluid to or from the fluid chambers in a direction substantially parallel to the nozzle row ***and to transfer a substantial part of the heat generated during droplet ejection to said conveyed droplet fluid.***

With respect to the above noted limitations of claim 6, the official action refers specifically to: 1) col 5, lines 61-67 and col. 6, lines 1-17 - (Embodiment 1); 2) col. 35, lines 46-62 - (Embodiment in Figure 59); and, 3) col. 39, lines 29-67 - (Embodiment in Figure 66) as disclosing features of claim 6. Each embodiment is addressed separately below. Each of these embodiments is dealt with in turn below.

1. Embodiment 1

The portion of Nojima to which the official action refers reads as follows:

> An intermediate or middle substrate 2 such as a silicon substrate has: a plurality of nozzle grooves 21 arranged at equal intervals on a surface of the substrate and extending in parallel to each other from an end thereof to form nozzle openings; concave portions 22 respectively communicated with the nozzle grooves 21 to form ejection chambers 6 respectively having bottom walls servings as diaphragms 5; fine grooves 23 respectively provided in the rear of the concave portions 22 and serving as ink inlets to form orifices 7; and a concave portion 24 to form a common ink cavity 8 for supplying in to the respective ejection chambers 6. Further, concave portions 25 are respectively provided under the diaphragms 5 to form vibrations chambers 9 so as to mount electrodes as will be described later. The nozzle grooves 21 are arranged at intervals of the pitch of about 2mm. The width of each nozzle groove 21 is selected to be about 40 μm. For example, the upper substrate 200 stuck onto the upper surface the (*sic.*) intermediate substrate 2 is made by glass or resin. The nozzle openings 4, the ejection chambers 6, the orifices 7 and the ink cavity 8 are formed by bonding the upper substrate 200 on the intermediate substrate 2. An ink supply port 14 communicated with the ink cavity 8 is formed in the upper substrate 200. The ink supply port 14 is connected to an ink tank (not shown), through a connection pipe 14 and a tube 17.

First, as is clear from Figs. 1 and 2, there is no "*support member comprising a fluid passageway conveying droplet fluid to or from the fluid chambers in a direction substantially parallel to said nozzle row.*" The common ink cavity 8 is instead formed in the silicon substrate 2 which provides the ejection chambers 6 and the diaphragms 5. Second, for the identical reasons discussed above with reference to claim 1, there is no disclosure of any transfer of heat generated during droplet ejection to the fluid conveyed in the ink cavity 8.

Embodiment 1 of Nojima fails to disclose or suggest a support member for the droplet ejection unit with at least one droplet fluid passageway communicating with the plurality of fluid chambers. Embodiment 1 also fails to disclose or suggest that

the passageway is arranged to convey droplet fluid to or from the fluid chambers in a direction substantially parallel to the nozzle row ***and to transfer a substantial part of the heat generated during droplet ejection to said conveyed droplet fluid***, as recited in claim 6. Nojima Embodiment 1, therefore, fails to disclose or suggest all of the limitations of independent claim 6.

2. Figure 59 Embodiment

The portions of Nojima to which the official action refers with regard to this embodiment read as follows:

> An intermediate or middle substrate 10000 such as a silicon substrate has: a plurality of nozzle grooves 110000 arranged at equal intervals on a surface of the substrate and extending from an end thereof in parallel to each other to form nozzle openings 40000; concave portions 120000 respectively communicated with the nozzle grooves 110000 to form ejection chambers 60000 respectively having bottom walls serving as diaphragms 50000; fine grooves 130000 respectively provided in the rear of the concave portions 120000 and serving as ink inlets to form orifices 70000; and a concave portion 140000 to form a common ink cavity 80000 for supplying in to the respective ejection chambers 60000. A plurality of ink inlet openings 130000a is further provided at the back of concave portion 140000. Each ink inlet opening 130000a is sized smaller than nozzle opening 40000, and functions as a filter preventing foreign matter in the ink from entering the ink jet head.

The structure in this Nojima embodiment is much the same as that of Embodiment 26 described above, with at least one notable exception. No support members for the diaphragms are provided in the vibration chambers. In the Figure 59 Embodiment, there is no "support member comprising a fluid passageway conveying droplet fluid to or from the fluid chambers in a direction substantially parallel to said nozzle row," as recited in claim 6. With reference to Fig. 59, it appears that, in the official action, the electrode tracks on substrate 20000 are being confused with the

common ink cavity 80000 in the substrate 10000. In addition, for the identical reasons discussed above with reference to Embodiment 26, the Figure 59 Embodiment does not disclose any transfer of heat generated during droplet ejection to the fluid conveyed in the ink cavity 80000.

The Figure 59 Embodiment of Nojima, therefore, fails to disclose or suggest all of the limitations of independent claim 6. This embodiment, thus, also does not anticipate independent claim 6.

3. Figure 66 Embodiment

The portions of Nojima to which the official action refers with regard to this embodiment read as follows:

> FIG. 66 is a section view of an ink jet head according to another preferred embodiment of the present invention. As shown in FIG. 66, this ink jet head 2100000 is a face ejection type ink jet head wherein nozzles 2040000 are arranged at equal intervals in two rows of 640000 nozzles per row on nozzle plate 2030000. As with the ink jet head 100000 according to the above preferred embodiment, this ink jet head 2100000 is a laminated structure of three elements; ink path substrate 2010000, electrode substrate 2020000, and nozzle plate 2030000.
>
> Nozzle plate 2030000 is a silicon wafer with the (100) face on the surface. The nozzles 2040000 are formed by an etching process. The ink path substrate 2010000 is a silicon substrate with a (110) crystal face direction, and is doped with a high concentration of boron on the diaphragm 2050000 surface. As in the ink jet head 100000 described above, ejection chambers 2060000 and diaphragms 2050000 are formed by anisotropic etching.
>
> The electrode substrate 2020000 is a boro-silicate glass substrate in which vibration chambers 2090000 are formed with individual electrodes 2210000 on the bottom thereof. It should be noted that substrates 2010000 and 2020000 are fastened together by anodic bonding, and substrates 2010000 and 2030000 are bonded with adhesive.

While the (110) face is exposed at the bottom (diaphragm 2050000) of the ejection chamber 2060000 of the ink path substrate 2010000, the slow etching rate (111) face is exposed at side wall 2060000a. As a result of this etching rate difference, the side walls 2060000a of the ejection chamber 2060000 become oblique to the surface, and the bottom part of the nozzles 2040000 formed in two rows on the ink path substrate 2010000 is large and relatively thick. Cavities 2400000 are disposed in this large, relatively thick part in this preferred Embodiment. Cavities 2400000 are formed by anisotropic etching from the back side of ink path substrate 2010000 (the side opposite the ejection chambers). Because the side walls 2400000a of the recesses that form cavities 2400000 are all formed by the (111) face, air chambers can be formed with good precision.

In this Figure 66 Embodiment, *if the electrode substrate 2020000 is considered to be a "support member"* for the ink path substrate 2010000 in which ejection chambers 2060000 and diaphragms 2050000 are formed by anisotropic etching, ***then there is no fluid passageway formed in the electrode substrate***. In this Figure 66 Embodiment, there is in fact no disclosure of any sort of fluid passageway arranged to convey droplet fluid to or from the ejection chambers 20600000 in a direction substantially parallel to the nozzle row. Again, perhaps the official action has confused the *air-filled* vibration chamber 20900000 with a fluid passageway.

The Figure 66 Embodiment of Nojima, therefore, fails to disclose or suggest all of the limitations of independent claim 6. This embodiment, thus, also does not anticipate independent claim 6. Finally, none of the other embodiments of Nojima disclose the features of claim 6.

For at least the reasons set forth above, Nojima does not disclose each and every element as set forth in independent claim 6 and dependent claims 12. The necessary burden of proof for a proper anticipation rejection, therefore, has not been met. As a result, Nojima does not anticipate those claims.

In an attempt to clarify an apparent misunderstanding of the claimed invention, the applicants refer to paragraph No. 7, page 10 of the official action. The comments thereat bear little relevance to the subject matter recited in claims 1 and 6. These claims *do not refer to active heating* of fluid, as the official action appears to suggest. In contrast, these claims refer to the *transfer of heat generated in a drive circuit* or *during ejection to a fluid conduit or passageway serving to convey fluid to and/or from an ejection chamber*, that is, not to a droplet ejection chamber.

C. Independent claim 13

Claim 13 recites, in part:

> a fluid chamber, at least part of which is formed from a first material having a first coefficient of thermal expansion, said chamber being associated with actuator means actuable to eject a droplet from the chamber and having a port for the inlet of droplet fluid thereto . . . .

Silverbrook, in Figs. 1 to 14, discloses a nozzle chamber 2 formed in a silicon wafer 20. If the nozzle chamber 2 is equated to the "fluid chamber" of claim 13, the nozzle chamber 2 in Silverbrook is then associated with a thermal actuator 89 for causing ink to be ejected from the chamber. The nozzle chamber 2 is supplied with ink from an ink supply channel 6.

Claim 13 further recites:

> a support member for said fluid chamber and including a passageway for supply of droplet liquid to said port, the support member being defined at least in part by a second material having a second coefficient of thermal expansion greater than said first coefficient; and

means for attaching the fluid chamber to the support member in order to substantially avoid transfer of thermal deformation of the support member to said fluid chamber.

Contrary to the assertions put forth in the official action, none of the Figs. 1 to 14 of Silverbrook disclose or suggest any form of a support member for the nozzle chamber 2. Without more explanation in the official action, it appears that the portion of the wafer 20 containing the ink supply chamber 6 in Silverbrook is considered to be a "support member." If such is the case, the purported "support member" is formed from the same material as the fluid chamber. This is in direct contrast to what is recited in claim 13.

In fact, the only passing disclosure of any sort of "support member" within Silverbrook is at column 6, lines 35 to 38. This excerpt refers to mounting "of the printheads in their packaging, which may be a *molded plastic former* incorporating ink channels which supply the appropriate color ink to the ink inlets at the back of the wafer (emphasis added),"

However, plastics tend to have a ***much*** lower thermal conductivity than silicon. For example, polystyrene has a thermal conductivity of 0.00144 W/cm/K, which is approximately *1000 times lower than that of silicon* (1.457 W/cm/K). In any event, no means are described for attaching the nozzle chamber to the former in order to substantially avoid transfer of thermal deformation of the former to the nozzle chamber.

As a result, Silverbrook does not disclose each and every element as set forth in independent claim 13 and dependent claims 14-17. Therefore, Silverbrook does not anticipate those claims.

Reconsideration and withdrawal of the anticipation rejections is hereby respectfully solicited in view of the foregoing remarks.

III. Claim Rejections - 35 U.S.C. §103

Claims 4, 5, and 7-9 have been rejected under §103(a) as obvious over Nojima in view of Allen. Reconsideration and withdrawal of the rejection is requested.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one having ordinary skill in the art, to modify the reference or to combine the teachings of two or more references. Second, there must be a reasonable expectation of success when combining the teachings of achieving the claimed subject matter. Finally, the prior art reference or references must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed invention and the reasonable expectation of success must each be found in the prior art, and not based on the applicants' own disclosure. *In re Vaeck*, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

The examiner bears the burden of establishing a prima facie case of obviousness and to satisfy this burden, must show "some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). To support a conclusion that a claimed combination is obvious, either: (a) the references must expressly or impliedly suggest the claimed combination to one of ordinary skill in the art, or (b) the examiner must present a convincing line of reasoning as to why a person of ordinary skill in the art

would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985).

Claims 4 and 5 are directly dependent from claim 1. As discussed above, Nojima does not disclose or suggest a drive circuit means to be in substation thermal contact with a conduit means that transfers fluid to and away from a fluid chamber so as to transfer a substantial part of the heat generated in the drive circuit to the droplet fluid. These deficiencies in Nojima are not remedied by Allen. Thus, because the combination of Nojima and Allen fail to teach or suggest all of the limitations of independent claim 1, no prima facie case of obviousness had been made. As a result, dependent claims 4 and 5 are not rendered obvious by the purported combination.

Claims 7-9 depend directly from independent claim 6. As discussed above, Nojima does not disclose or suggest a support member for the droplet ejection unit, wherein the support member includes at least one droplet fluid passageway communicating with the plurality of fluid chambers and is arranged to convey droplet fluid to or from the fluid chambers in a direction substantially parallel to the nozzle and to transfer a substantial part of the heat generated during droplet ejection to said conveyed droplet fluid. These deficiencies in Nojima are not remedied by Allen as relating to independent claim 6. Thus, because the combination of Nojima and Allen does not teach or suggest all of the limitations of independent claim 6, no prima facie case of obviousness has been made. Consequently, dependent claims 7-9 are not rendered obvious.

Similarly, claims 10 and 11 have been rejected as obvious over Nojima in view of Drake. Dependent claims 10 and 11 depend directly from independent claim

6. As discussed above, Nojima fails to disclose all of the limitations of independent claim 6. These deficiencies in Nojima are not found in Drake. As a result, the combination of Nojima and Drake also fails to disclose or suggest all that limitations of independent claim 6. Thus, no prima facie case of obviousness has been made and, as a result, dependent claims 10 and 11 are not rendered obvious by the purported combination.

Reconsideration and withdrawal of the obviousness rejections is hereby respectfully solicited in view of the foregoing remarks.

CONCLUSION

Reconsideration and withdrawal of the rejections is hereby respectfully solicited in view of the foregoing remarks, and allowance of claims 1-17 is requested.

The examiner is invited to contact the undersigned at the telephone number listed below in order to discuss any remaining issues or matters of form that will move this case toward allowance.

Respectfully submitted,

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